- Find the electric flux through a disc of radius s_0 located a distance z_0 from a point charge q_0. See the figure. Use two methods to find the answer
  1- symmetry argument [hint: the solid angle subtended by the disc is $\int_{\phi=0}^{2\pi}\int_{\theta=0}^{\theta_0}\sin\theta\, d\theta d\phi = 2\pi(1-\cos\theta_0) = 2\pi\left(1-\frac{z_0}{\sqrt{s_0^2+z_0^2}}\right)$], and
  2- direct calculation using $\phi_E = \int_S \vec{E}\cdot d\vec{a}$